

The Civilization Network

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Humans have been developing network of traffic routes over land and ocean for trading or other purposes over history. The basic structure of human civilization is a network formed with such traffic routes. To study human history as the history of development of civilization-network would give a theoretical basis to the correlated-civilization theory that focuses on relational aspect of civilizations.

Land networks and ocean networks

Land and ocean have always provided humans with space to set traffic routes to move and interact with other humans. Some might argue that there are great mountains, deserts and expanse of ocean that divide people because nobody could live in such terrain. Even so, since ancient times, we have managed to open up trading and shipping routes to connect regions. Lands and seas, they divide and connect us. It is because people have set routes against obstacles on lands and seas that civilization began and flourished. These routes turned division into connection both on lands and seas.

For civilization these routes are like arteries and heart for human. They push people, communities and civilizations to develop by connecting them. On land and ocean, people go by to trade goods and information. At the junctions of these routes were formed towns and cities that prompted the exchange of culture even more. Civilizations have been closely connected, influenced each other and developed together by people, goods and information going about on the routes.

From the very beginning of human history, people have been setting such routes over globe, forming areas where cultural communication took place. Just as in our brain neurons stretch synapses to create vast network of nerves, humans created vast cultural networks by spreading web of traffic routes over lands and seas. Those routes that run across Eurasia continent, linking oasis, step regions and ocean are good

examples to see how they networked cultures and how local people worked as medium. If it were not for this network, the development of Eurasia would not have been the same.

Those traffic routes laid over lands and seas are primarily for trading. And cities formed at junctions flourished with long and medium distance traders. Nomads on horses, oasis-dwellers on camels and sailors on ships, people passed by back and forth across grass land, desert and ocean. Horses and camels sailed through grass-land and desert like a ship, and ships ran across ocean like nomads. Horse and camel were to nomads and oasis people what ship was to sailors, like ship was to sailors what horse and camel to nomads and oasis people. Horses and camels get fueled with grass on the ground, and ship, in the same way, with the wind and ocean current. They got empowered by the surrounding nature and supported commercial activities.

At connection points of trading networks were born towns where many merchants and travelers passed through. These busy towns gradually grew into bigger cities. The bunch of oasis cities in the area from the central to western Asia were important connections between Asia and Europe. Also, harbor cities in the Mediterranean, Arabian Peninsula, South India, the South-East Asia and the coastal area of China, were connected closely as parts of international trading network, and as oasis cities in Eurasia, prompted trading between Asia and Europe. Both oasis cities that formed land network and harbor cities that formed ocean network, where many different cultures were transmitted and exchanged, as the result of it, had often experienced changes of cultural trend. But it was this cultural change that played a crucial role for forming civilizations in the East, the West and the South of Eurasia.

Islands around Eurasia followed the same course. Although islands are surrounded by water, but they are never abandoned, rather used as a good connection to trade, transmit people, goods and information. As a junction of culture, islands always saw new things passing through it. Islands look to be separated from the main land, but it actually worked like a gate through which new cultures were taken out and brought in. Islands, too, open by getting connected. Sicily island in the Mediterranean, the Socotra Archipelago and Sri Lanka in the Indian sea, and islands in the South-East Asia, Taiwan, Ryukyu islands and Tsushima in the far East. They all have the same function in each region of connecting civilizations.

Whether in land or ocean, networks got connected, and they contributed for civilizations to develop. Land and land, ocean and ocean and land and ocean. Step routes, oasis routes, the Mediterranean, the Indian sea and the East Asia sea. By connecting step-regions, oasis and oceans, the huge Eurasian civilization network was

gradually formed over years.

Cities that developed along coastal area of a continent and a peninsula had an important role to link land-network and ocean-network. Goods that came from the sea were taken up to the land through harbor cities locating along the coast, and goods from the land were taken out to the sea. Land network and ocean network worked together through which people, goods and information moved from region to region. Indeed, to bring Chinese goods to Europe, they first brought it through the South China sea or the Indian Ocean to a harbor city in Persia, and then moved to the inland area of the Central Asia by oasis route in Iranian Plateau, then went eastward along another route across step-region and finally reached Europe. China, South East Asia, India, west Asia and Europe were connected by network covering over land and ocean.

Peninsulas in Eurasia were also important connections. Peninsula being a half island which is surrounded three directions by water, connect land and ocean, and ocean and land. Things coming from sea were handed to land through peninsulas, and things produced on land were taken to sea through peninsula. Iberia Peninsula, Arabian Peninsula, the Indochinese peninsula, Korean Peninsula. They all have the same function. Indeed, it was the influx of Islamic culture through Iberian Peninsula that enabled the West to develop its civilization. The Mediterranean region flourished through trading of Indian goods through Iberian Peninsula. Indian goods were also taken to China through the Indochinese peninsula. Of course, they came to Japan through Korea. Peninsula has an important role in transmitting cultures and interactions between civilizations.

In connecting land and sea, rivers are also important. Goods arriving to harbor are often brought to inland region along river. River was the most common traffic route in pre-modern time, and it was also a route for cultural transmission. River traffic worked as a medium between land and sea.

Both land and sea nurtured traffic and trading routes, connecting civilizations, and thus brought prosperity to humans. All of civilizations are connected to others by such routes, and trading and interactions that take place on these routes make them to grow. An ancient Japanese term “Musubi” has two meanings that are “connection” and “production”, which implies a strong relation in these two words. Civilizations develop each of them being conditioned by geography, culture and environment. But traffic routes and trading routes enabled them to overcome problems and communicate each other. It is because civilizations are connected by thick networks of land and sea that they can work together and grow together. Land network and ocean

network that are connected have been playing a significant role in the development of world civilizations.

Even ancient American civilizations in Meso-America and Andes, though loosely, were connected to Eurasia by maritime people who were active in the Pacific and the Atlantic Ocean, and the Old and the New continents were influencing each other.

Birth of global network

Historically, human civilization has developed and further improved by connecting networks over land and sea. These networks have been developed gradually from the very beginning of the cultural development of humans. After Christ, what the Islam, the Mongolians and the Western powers did was to connect all the regional networks to make a global network.

From the 7th to the 8th century, the global network made by the Arab/Islam stretched across three continents of Asia, Europe and Africa, covering the South-China sea and the Mediterranean Sea, connecting the step routes, the oasis route and the southern-ocean route in Eurasia. It was practically the first global network, at least in Afro-Eurasian region. Based at connecting points on the oasis route, the Mediterranean route and the Indian-ocean route, the Arab/Islam who were mostly middle merchants, connected oasis cities and harbor cities, and created Islam-based international trading network, which brought commercial prosperity to the eastern and western part of Eurasia. This global network established by Moslems expanded further to the Western Europe and China and the South-East Asia and created vast economic zone covering the whole world. It was this Islam global network that prompted economic development and regional population growth both in Europe and Japan.

The global network that Mongolia created in the 13th and the 14th century was a rearranged version of the Islam network. The Mongolian empire realized an unprecedented scale of economic success in Eurasia and realized a grand economic circulation by connecting land and ocean networks tight that had been established by Moslems. Because of this Mongolian commercial network that made Eurasian continent a single economic zone, the East and the West were made even closer. Western Europe was linked to this network by the Mediterranean Sea and step routes, and Japan by the Eastern-China sea. It was not coincident that commercial revolution occurred in the West and in Japan at about the same time, and it was enabled by the network.

The maritime global network established by Spain and Portugal in the end of the 15th century, too, followed the networks used by Moslems or Mongolians, at least the seaborne part. Adding to this, they managed to connect the Pacific Ocean and the Atlantic Ocean to the original, and as a result of it, American continents was connected to Eurasia and Africa. Covering all across the globe, it was literally a global network. Later, Netherland and the British in turn lead the network, gradually expanding its area into other part of Asia to the south, east and west.

Yet, the completion of truly Western-dominated global network didn't come until the 19th century, when nations in Western Europe, bolstered by industrial revolution colonized Asian and established a domination in the region. As the result of this global scale advancement of the West, most of the world was put under Western influence. China, Korea and Japan in East Asia, also came under the influence of the network after the 16th century, and in the increasing pressure from the network mechanism, had to inevitably become the part of it.

World system theory and the world = Economic theory

The global network dominated by the West is what Immanuel Wallerstein called "the modern world-system". He argued that human's economic system can be classified in three phases that are mini-system, world-empires and world-economics. Mini-system is an economy based on a hunting-gathering or farming lifestyle where division of labor does not take place. World empires represents the system of pre-modern era where division of labor is conducted by the governing body of the society. And the last one, world-economics, is the state of economy that contains culturally and politically multiple systems that work together to run a single economy. Wallerstein's modern world-system represents the world-economics. Also, modern world-system is thought to have internationally divided labor system consisting of three layers (core countries, semi-periphery countries, and the periphery countries). The West-lead modern capitalism system is the most typical form of the world-economics and the world system. Indeed, after the 16th century, a large scale inter-regional labor-division system that started in the West quickly swept nearby regions and eventually the whole world. Western Europe is the center of the system, and the Eastern Europe and Latin-America are periphery countries, and the Mediterranean region is referred to as semi-periphery. semi-periphery countries and the periphery countries ended in servile position in modern world system. (*1)

However, Wallerstein's modern world-system theory has a limitation in its modern-West and core countries centered point of view, with the lack of consideration in

character of peripheral areas.

It is true that in modern era, periphery and semi-periphery regions have been merged by the Western modern world system, but they originally had an important function of connecting remoted economic regions, not being a mere periphery country. Pre-modern era empires, too, were not necessarily operated as a politically closed and regulated economy. As we see in the role played by oasis towns of harbor towns in central Asia, trading of silk, pottery, spices or precious metals, at the border between empires, peripheral regions contributed as medium to circulate empire's economy. Even in Wallerstein's world-empires era, empires were closely connected and world-wide scale of economy existed, and it were peripheral regions that connected them as medium. Wallerstein doesn't seem to have taken much attention in this point, which is making a weak point in his theory.

Also, his theory is far too be focused on the modern West and its economy, with no enough observation of culture and civilization, which is the reason it is insignificant as a theory dealing with civilization.

In this point, the theory of "World-Economy (Économy-Monde)" by Fernand Braude is more appropriate. Not like Wallerstein, in his theory, Braude put more emphasis on peripheral region than core region. Braude's World-Economy represents certain economic zones established around world-empires before capitalism swept the world. Braude focused on the fact that despite suppression by world-empires, such peripheral economic activities spread beyond political and cultural border and played an actual role in the transition of regional history. Braude took up as examples Persians' and Egyptians' ocean trading in Orient, ancient roman's in the Indian Sea and the Red Sea, and transborder commercial activities by Phoenicians and Armenians, and the broad business networks built by the Arab/Islam. Indeed, civilizations are connected by them, nomads and traders, who live or work in the bordering region, and because of this, by getting influenced each other, they developed themselves. In this point, Braude's World-Economy theory and his works based on the theme, seem more appropriate. (*2)

Civilization as a network

The history of human civilization can be put as that of development of network. If each civilization just occurred and stayed alone, it would never develop itself. Yet, the fact is that it never stays alone but gets connected with other civilizations. They influence each other and form network, and by making the network wider and denser, they develop together.

The appearance of city-based civilization itself is the result of networking. For majority of city dwellers don't participate directly in producing food, so they need a network with farmers living outside the city. Instead the city works as the center of politics, religion and businesses in the region. Early city-states occurred by forming such network. The next step is that the city-state, getting connected with other city-states and forming even bigger network, become part of an alliance or a regional-state. And the regional-state continues to expand the network by taking in surrounding regions to become eventually a world-empire. (*3)

Achaemenid Empire of Persia, Qin and Han Dynasties in China and Hellenism/Roman Empire were established in such process. And these empires also get connected with others through commercial traders or by traveling people like nomads. The huge network in Eurasia established by the Arab/Islam and the Mongolians was also still in the developing in terms of the history of human network. The global network developed by Western Europeans was built on this. Thus, Today's world civilization that covers the entire earth was born.

Some might say that the Mesoamerican civilization and the Andes civilization, being relatively separated from the rest of the world, developed spontaneously by themselves. But inside American continent and between these two civilizations, the same process must have taken place, which starts from appearance of a city-state, and then formation of intercity network, the transformation from a regional-state to a world-empire. Also, here, it was a network of trading and interaction that developed civilizations.

As we have seen, the history of human civilization can be described as the process of connection and expansion of each civilization. They got connected each other to form a network, and became stronger. Needless to say, elements that connected civilizations were as important, so be the role of traffic routes that enabled transportation and communication. A network between civilizations are made by traffic network and people who use it. A network itself gets connected with other networks and sophisticated, making it possible for civilizations to receive more mutual influence and improve. It is just like that when single-celled organisms evolved to a multicellular organism, they had to develop networks of nerves, immune system, excretion system, vessels to sophisticate communication between cells. Civilization works just like a living organism.

In *Kegon-kyo (Avatamsaka Sutra)* which is one of the biggest sutras in Mahayana Buddhism, our world where everything is reflecting each other is compared to the Indra-network (Indra's net). It is said that a Buddhist God, Indra, has in its residence

a net with countless number of jewels tied on its knots, each jewel reflecting others and sparking infinite light. The Indra-network represents the situation of everything being related and affecting each other. Mandala which is common in Esoteric Buddhism is the pictorial image of this *Kegon-kyo* world view.

Human civilization has similar structure to the Indra-network and Mandala. Each civilization doesn't stay alone but is related to other civilizations, affecting and complementing each other. Civilizations get merged and influence each other. One civilization can stand by taking other civilization into it.

Actually, *Kegon-kyo* itself was established in the north-western part of India which was one of the connecting points of civilization network that consisted of multiple cultures. Mahayana Buddhism, a mixture of Indian Buddhism, Hellenistic and Persian culture that had come from the west was born in the north-west India which is a part of the oasis routes that runs across Eurasian continent, And *Kegon-kyo* is one of the core teachings of Mahayana. Borobudur Temple ruin in Java island, Indonesia, is a 3-dimensional Mandala that represents *Kegon-kyo* world view. Java island, too, a crossing point of civilizations.

Network is a netted structure with many dots connected by many lines. Human civilization has a network structure, connecting many points and making them related, too. Traffic routes connecting remoted regions are the most visible aspect of this network structure. Through the net of traffic covering across land and ocean, people move around, goods are exchanged, information passed, technology learnt and culture spreads, and as a result, civilizations develop. Human activities taking place here such as trading, religious and politic communication and immigration also play an important role here.

Each civilization has to be evaluated in the entire network. Civilization is based on a relation with others. The reason of the existence of a civilization is found in its relation with other civilizations. What makes a civilization exist is not its own value but a relationship with others. A relation forms a circle, so it can be said also a civilization is based on and supported by a circle. It is in the circle that interactions among civilizations occur, and the interaction pushes a civilization to move. Civilization is like a variable number in mathematics that changes its quality in relation with others or environment.

Civilization is a process of change. Civilization doesn't exist solid all by itself but it does only as a process in relation with others. It is wrong to see a civilization as an independent object. None of civilization does have independence nor objectivity. They exist always in relationship.

In Buddhism, the notion of “being related” is described with the term “Engi”. Buddhist people thought that nothing happens by itself, everything has reasons for its being and it lives related with the reasons. Civilization, too, comes in relation with others. It comes to exist as a result of some causes. In this sense, civilization has to be understood as something that exists only in relation and not being substantial itself.

Therefore, we have to see civilization not as an independent substance but an element of a certain relationship. An accurate description of civilization would be “theory of something between civilizations” or “Relational civilization theory” that focuses mainly on civilization’s relationship with other civilizations and the circumstance in which it exists, with something between connected civilizations the central theme of the theory. Just like other subjects, in civilization study, we have to see through “Zu”, a visible surface, to find “Ji”, a true-self. By seeing things inside-out, we would be able to find a different aspect of human history.

Mutual relationship of civilizations

Civilizations are separated and connected at the same time. They have connections not only physically but also in the sense of time. Through this network goods and culture change hands. Ancient Egypt is said to have been connected to Japan because Rosetta stone inscription and Japan’s chrysanthemum crest have shared aspect.

Human civilization is draping fabric of inseparable matters. All the aspects that consist of civilization are connected physically and timely. Therefore, to understand one civilization it is necessary to know about other civilizations. A cause of incident that occurs in a civilization is always found in other civilizations. All events in history are mutually connected and working together. This is why we find in everything an influence of something that seems being too far away to be related.

For example, Japan was greatly affected by Mohamed who lived in a corner of the Arabian Peninsula. Firstly, Mohamed conquered Iran and ruined the Sassanid Persia. After that, Persians who had fled along the oasis route to Tang capital of China brought Persian culture which later reached Tempyo and Hakuho era Japan and left a visible influence on Japan’s culture of the time. Secondly, Under the rule of the Arab/Islam empire founded by Mohamed, Arabic merchants had set trading network that connected the Mediterranean Sea, south India, the South-East Asia and China. Flourishment of commercial activity in Eurasia also affected Japan in around the end of Heian to the early Kamakura period. Thirdly, after Mohamed, Western nations succeeded his ocean trading network, which consequently brought Portugal and Western (Nanban) culture to the Sengoku era Japan. This became an opportunity for

Japan to open up a new era. No matter how far away in distance and in time, history is moving all together.

Civilizations are working together as parts of network, and in each civilization found influence from other civilizations. Civilization metabolizes itself by adopting new aspect from outside. A local culture that looks unique is basically a mixture of some other cultures. Language changes and grows richer in expression when getting exposed to foreign languages. Civilizations develop by merging with others.

In this sense, the border between uniqueness and imitation is pretty ambiguous. One person's ability of invention is limited, but it is still possible to produce new thing by assembling inventions made by others. Civilization becomes unique in the same way by borrowing ideas and elements from other civilizations and rearranging them. It is like cooking food with ingredients obtained elsewhere. How arrange these ingredients makes difference. Because civilizations develop by getting connected and merging into each other. There is no such thing as perfect originality. In human life, we seldom invent things, but mostly use something invented by our predecessors and adjust them by making arrangement. But actually, by making one addition, we are producing a new thing. It would be a good example that Sadō, Japanese traditional tea ceremony, was formed by taking ideas from tea party held at Zen Buddhist temple (Zen Buddhism was introduced from China) and Christian church mass. Creativity is actually an ability to find parts to reassemble.

Human civilization has always repeated the cycle of "imitation", "addition" and "handing over". One civilization starts from imitation, and produce uniqueness by adding new elements to the original idea, and hands it over to another civilization. The next civilization, again, after adding elements, passes it to the next. Human civilization has been developed this way. There is also a concept of time in the networking structure of human civilization.

Its layered structure comes from mutual interactions of civilizations. All civilizations have developed through getting influenced by others over times and piling up the experience in layer. The Western civilization seems original but it is basically Celtic culture topped with German culture, added with Greece/Roman traditions, Christianity and even Islam. It is also a mixed civilization. Islam is also based on the ground of Mesopotamian, Persian and Hellenic culture. Chinese culture is based on the mixture of the Chang Jiang and the Yellow river civilizations influenced by nomad culture and Buddhism from India.

Some deprecate Japanese culture as impure, but actually all civilizations have become unique by adopting other cultures. There is no completely pure culture.

Learning and borrowing ideas from other culture is the way for a civilization to establish its own character.

In the structure of civilization network, they are all connected and merged, so each civilization, in a way, contains other civilizations inside. Each of civilization consists of all the others, and one civilization can be found in all the others. In one civilization, there are all civilizations. All are in one, and one is in all. In individual is the whole, and in the whole is an individual. Japanese civilization has been receiving cultural influence from everywhere in the world through land and ocean routes in Eurasia, south-east Asia and the Pacific Ocean. Japanese civilization contains the world culture and it can be found at anywhere in the world.

Therefore, civilization can't cut away itself from other civilization. Rather it can stand itself only by accepting others. Moreover, because civilizations are closely connected and mutually interacting, even distinction is vague. It is often impossible to find what is truly original aspect of a civilization. Particularly, at the junctions of network, one can't be clearly separated from others. At these junctions, many different cultures meet, merge and often creations occur. The establishment of Mahayana on north-western India and Christianity in Syria proves it. Both, being important traffic hubs, were so-called the cross-roads of civilization where many cultural encounters and conflicts took place. Creativity works at the point where different cultures make collision and fuse.

Butterfly effect and Boomerang effect of civilization

In our world where civilizations have a network structure, it is often a case that subtle irregularity such as a small invention or a trifle incident occurring somewhere result in a massive movement. Because everything is connected in the network, even a smallest wave could be amplified while moving through the net and turns out to cause much bigger effect. So complicated the civilization network is that "a hurricane occurs in America because a butterfly has flapped in Hong Kong" literally happens. This is the "Butterfly effect" of civilization.

That Zhang Qian visited Ferghana and brought back good horses and horse feeding crops like medic to China helped raise the ability of Han's military, which enabled China to defend itself from northern nomads. Compass was invented in Song period China and was taken by Moslem traders through the South-Eastern sea and the Indian sea to the Mediterranean region where locals improved it and began making long distance sailing, which was the beginning of the Age of Discovery. These are typical results of the butterfly effect.

Also, because of the mutually interfering nature of civilization network, one invention, after spreading all over, through a sophistication process, always comes back to the first place. This phenomenon could be called the “Boomerang effect” of civilization. Here, cause and result go around in circular, making a self-referencing loop. It would be an example that gun-powder and firearms that were originally invented in China, after traveling in hands of traders, ended up in Europe, and (as always) got further improved to guns or cannons. These new arms eventually came back to Asia as a big threat when Europeans colonized Asia. Ironically, the source of firearms that later devastated China and Asia, was in China. It was the non-Westerns who made the Westerns stronger and put the non-Westerns into trouble. However, it is also true that this self-reference induced Asia’s awakening, which causes another civilizational development.

Civilization network, also like the network of neuron in human brain, seems to have regenerative ability. If one part is destroyed, the function can be recovered by substituting or rearranging by other parts. It could be described as the fluid nature of civilization. Eurasia’s trading routes that run through step regions and oasis towns once declined because of migration of people from the end of the 2nd century to the 6th century. But, instead, ocean routes through the south-China sea, the Indian sea and the Mediterranean Sea became busy as the southern Dynasty of China, Sassanian Persia and the Eastern Roman Empire were flourished.

Civilizations repeat downfalls and revivals, and death and rebirth, which can be also explained in the context of network’s life cycle. Civilization often disappears when its network gets cut off, weekend or dead. But the reconstruction and rearrangement of network is beginning at the same moment, and a new civilization comes to a birth. So, civilization once ends its life but the one coming up next is in a way the successor of the previous one. For example, the rise and fall of the succession of civilizations that ruled the Middle-East starting from Achaemenid Empire of Persia to Hellenism, Parthia, the Sassanian, the Arab/Islam Empire, Turkish/Islam and Mongolian Empire, happened always parallel with the rise and fall of the network among cities in the region which were originally built by the Achaemenids. In the process of transition of civilizations, the culture first formed by Persians, too, followed the pass of falling, handing over and rearrangement.

Civilization and natural ecosystem

All of the civilizations ever appeared on earth are a part of a kind of natural ecosystem in terms of both time and space. Ecosystem is a network of relationship in

which all elements, both living and non-living things, related organically. There, animals, plants, bacteria and minerals are intricately connected to form a network, and through the network circulate objects and energy relentlessly, strengthening its connection. Living things in the ecosystem exist, being connected with other elements in various ways, as a part of the whole mutual-related network. All the elements are so closely connected and depending on each other, it is impossible to separate each element with the entire function maintained. Ecosystem is the world of diversity and relationship.

Just like natural ecosystem, the world of civilization is based on diversity and relationship. Civilization world is also a network where cultures, natural environment, climate and geographical conditions are organically related. It is people, goods, money and information that circulate this network and hold it. Each civilization is connected to others through various reasons such as business, communication, politics or warfare, taking a part in the entire civilization network. Because civilizations are so closely connected that none of them can be standing alone.

Both natural ecosystem and civilization-system are based on a mutual relationship. Taking out one piece of the system and examining it will not tell much about the character of the piece, because closely connected pieces are depending on each other and functioning together. A piece cannot be distinguished, it can be only relatively in the system. Everything is connected, and even if trying to pick up one, it comes with others.

In natural ecosystem where all elements are closely related and forming a dense network, among them interactions are always happening. So, a change on an element affects all the other elements and induces a transformation of the entire system. There are various type of interactions happening between elements. It could be competitive and offensive, and also it could be cooperative and defensive. But, in any case, no element is able to stay completely free from influence from others. It is from such complicated interactions that living things develop itself in the form of transformation or evolution. Indeed, they have been evolving to this day through relationship and interaction with others. This is what we call “co-evolution”.

In the same way, the world of civilization has a network of mutually related civilizations, a change in one civilization is transmitted immediately to other civilizations, and it could affect the entire human life. The invention of bronze and iron tools, or gun powder and compass are typical examples. The interaction that occurs between civilizations takes various forms such as war, invasion, immigration,

exchange or communication. And civilization can't live without interacting with other civilizations. Through this interaction, civilization can metabolize itself and develop. "Co-evolution" is happening also in the world of civilization.

The balance of natural ecosystem fluctuates all the time because of indispensable risk factors such as conflicts of creatures and of plants, changing environment, which is caused also by creatures or bacteria. Even seemingly static plants have disturbing element and never follow decisive and idealistic course of evolution. Around them such elements as animals, other plants, climate condition and geological factors keep changing, so the environment in which they live is never be the same.

The world of civilization, too, is always exposed to various change-making factors like wars, nomad's immigration or invasion, conflicts over trading territory, climate change, etc. Therefore, it is impossible for any civilization to stay still and to develop in order being free from outside influence. Just as an individual person, a civilization has been developing itself, struggling and wondering in life.

Both natural ecosystem and civilization system are in an unstable state, being exposed to ever-changing elements outside and inside, responding to any occurring action and adjusting by transforming itself sometimes. They never get fixed in one condition. All ecosystems and civilizations change. Nothing stays still.

(Note)

(*1) Wallerstein, I *The Capitalist World-economy: Essays*, Cambridge University Press, 1979. 1 9

(*2) Braudel, F *Civilisation matérielle, économie et capitalisme*, III—1 chap.1

(*3) Masakatsu Miyazaki *Islam Network*, Kodansha Ltd., 1994 P.15-16